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(58) Field of Search
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(54) Abstract Title
Ceiling lamp with rotatable arms

(57) A lamp assembly 10 has a plurality of arms 15, 16, 17 extending outwards from a mounting body 11. Some or all of the arms are rotatable relative to the body, allowing them to be moved between a transit position (figure 1), in which they are gathered together, and an operative position (figure 4) in which they are angularly separated. The arms may be secured in the operative position by resiliently biased catches (29, figure 2) that engage with apertures (31) in the body. An alternative locking means (figures 6 and 7) may be mounted on top of the body and comprises a flexed plate (106) with shaped apertures (108) that are biased against the correspondingly shaped fastenings (22) for the arms. Rotation of the arms into the operative position aligns the fastenings with the apertures, allowing the plate to relax and lock the arms in place.

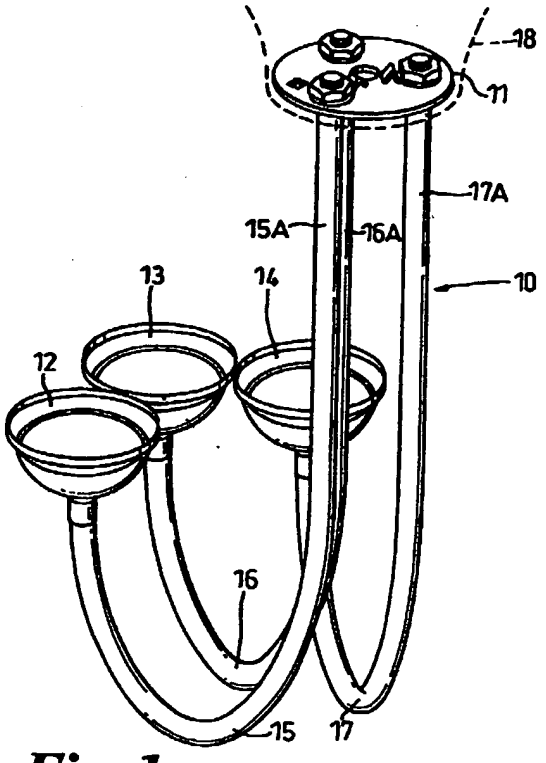

Fig. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

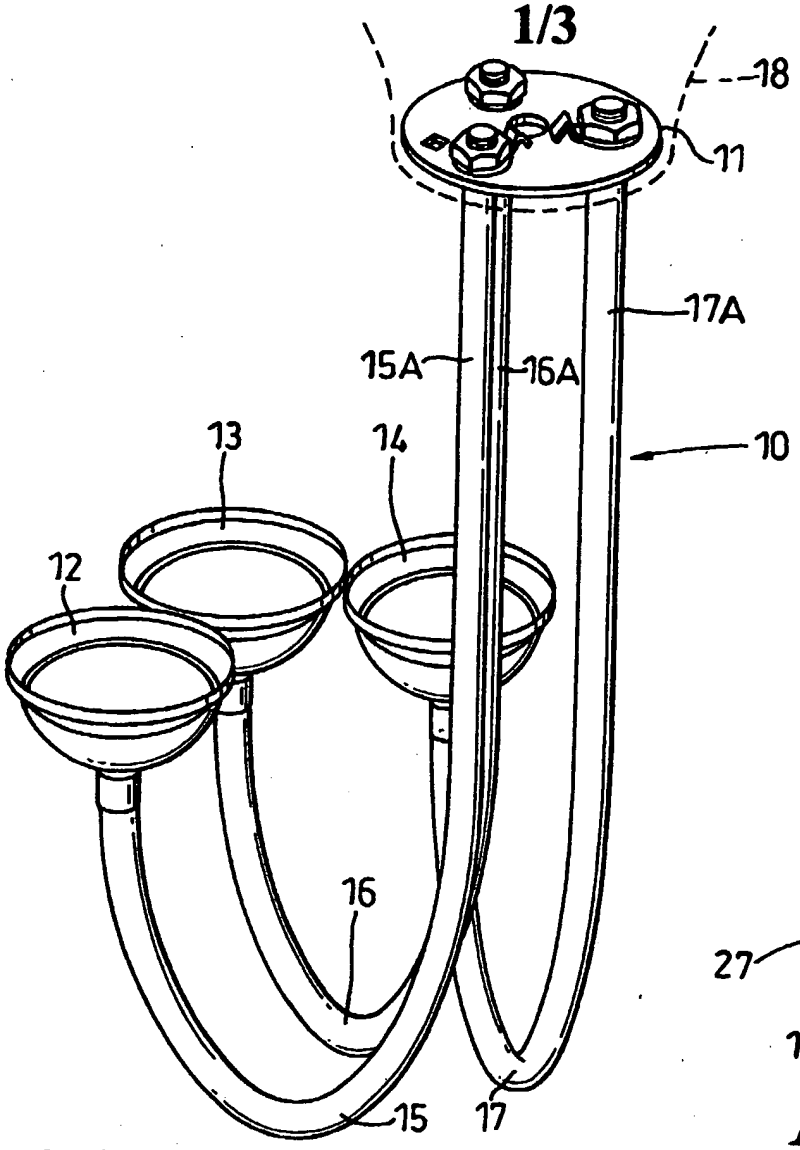

Fig. 1

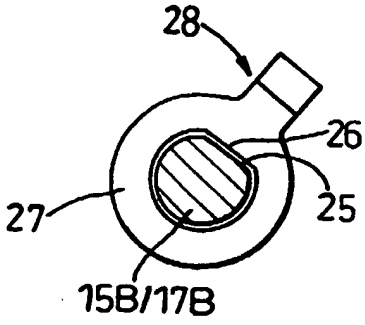

Fig. 3

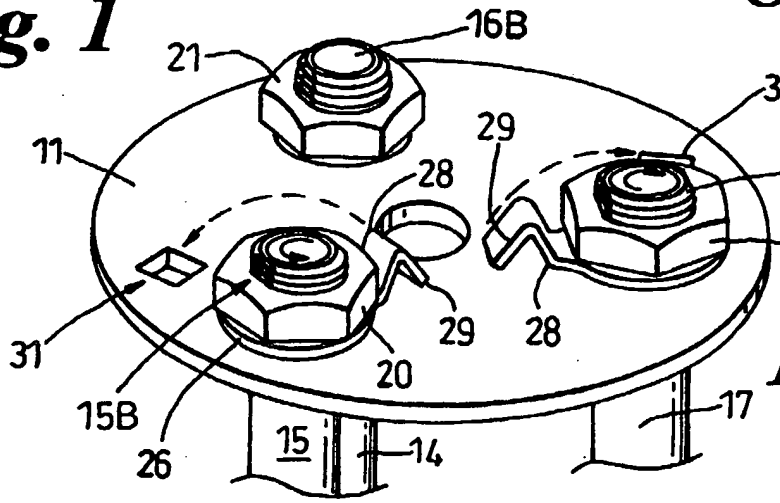

Fig. 2

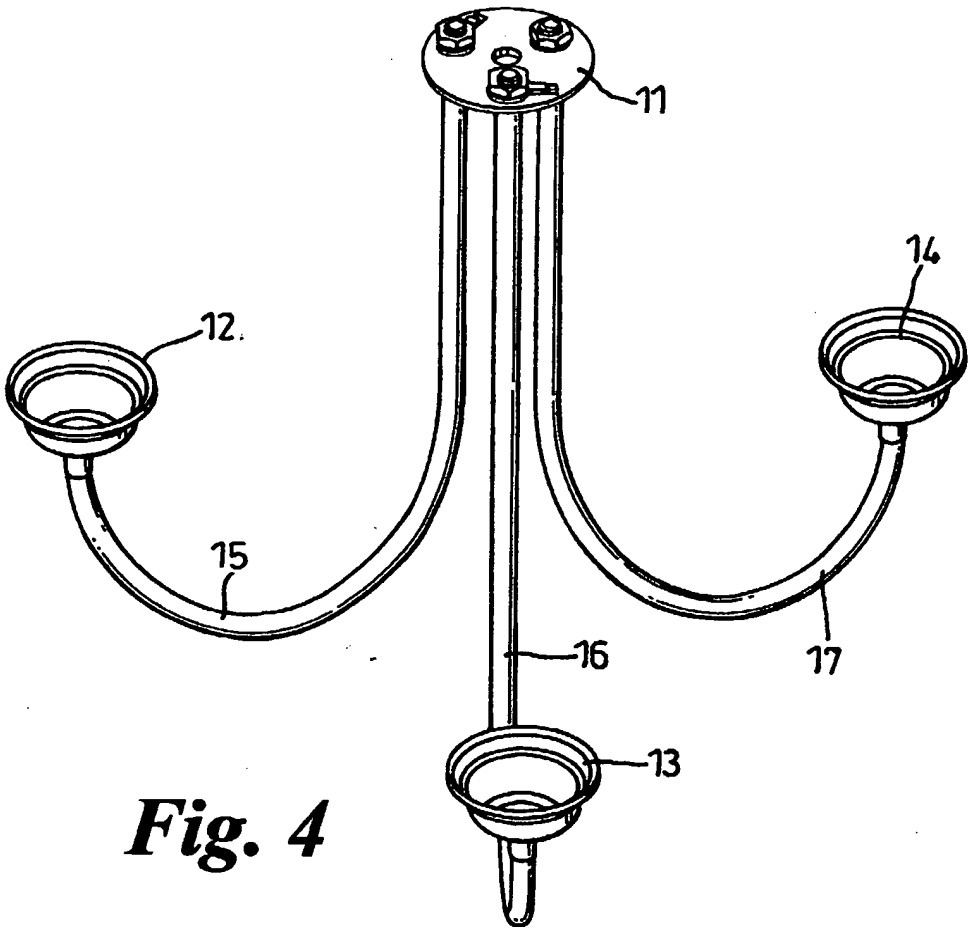

Fig. 4

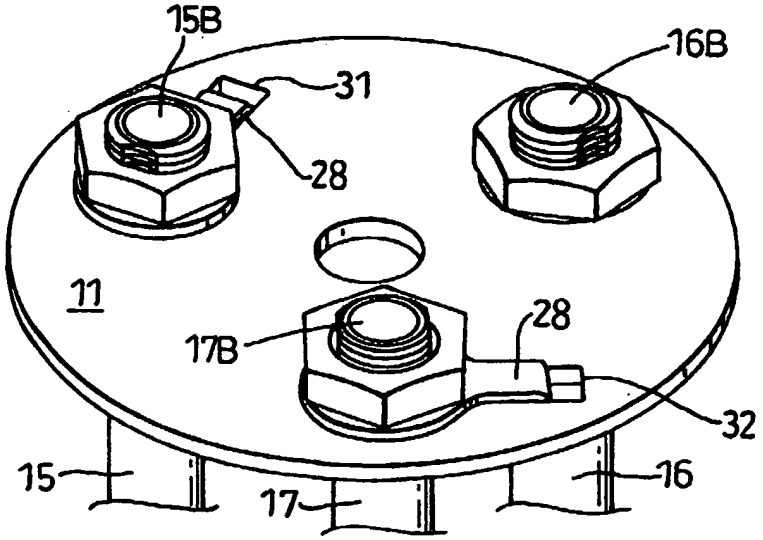

Fig. 5

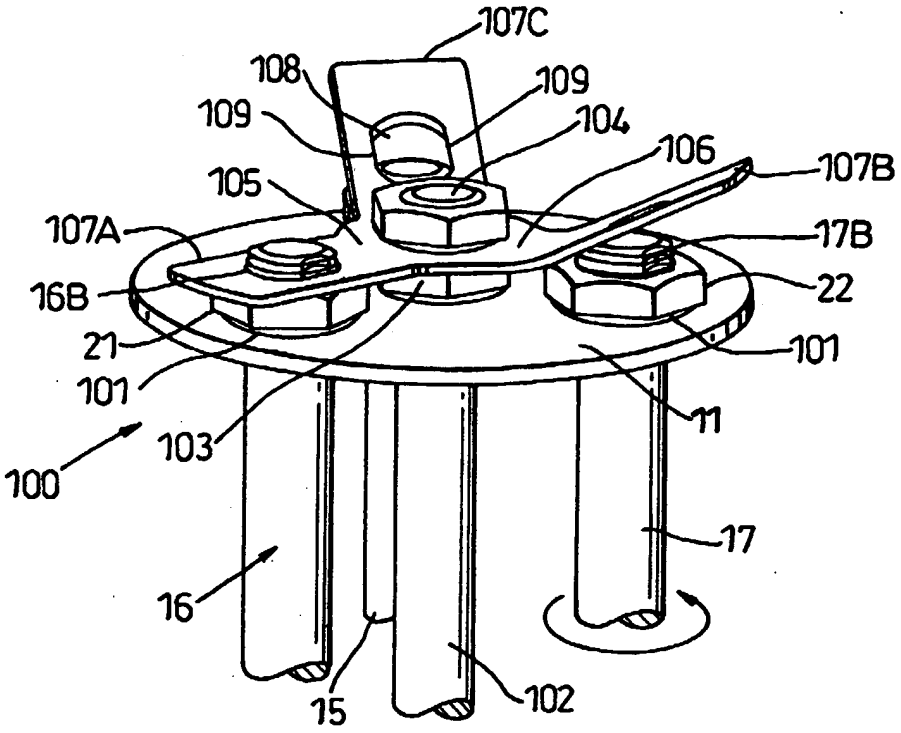
107C
108
109
109
104
106
107B
105
107A
17B
16B
22
21
101
101
11
103
100
17
16
15
102

Fig. 6

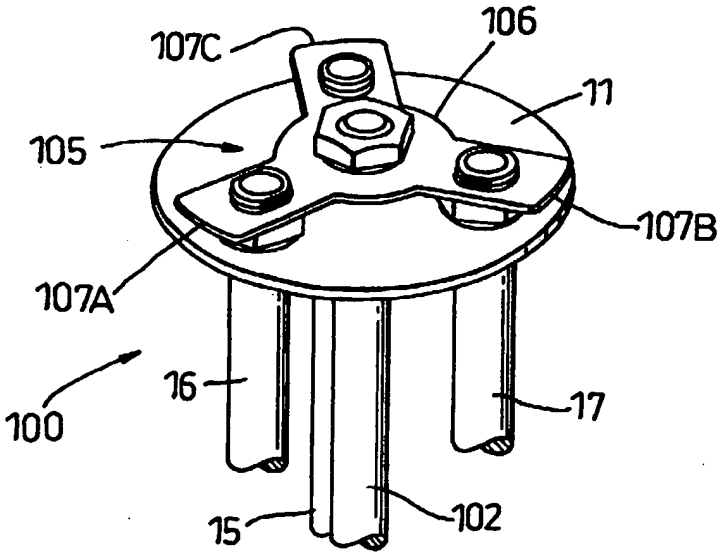
107C
106
11
105
107B
107A
100
16
17
15
102

Fig. 7

A Light Fitting and a Method of Packaging the same

Field

This invention relates to lamp fittings and in particular to lamp fittings comprising a plurality of arms radiating from a central body.

Background of the Invention

It is known for light fittings to comprise a central body having a plurality of arms radiating from the body and each of which has a bulb holder attached to the end thereof. Such fittings typically comprise from three to five arms and may form parts of ceiling lights or standard lamps. A problem with such fittings, or lamps including such fittings, is their relatively large overall spread causing packaging to be bulky. This in turn makes packaging, storage and transport relatively expensive.

The present invention provides a light fitting which in use has a relatively large overall spread and which can be more easily packaged than the prior art light fittings.

Statements of Invention

According to a first aspect of the present invention there is provided a method of packaging, storage, and transport of a light fitting comprising a body with a plurality of arms extending outwardly from said body for support of spaced apart respective lamp holders, wherein at least some

of said arms are rotatable relative to the body such that the fitting is packaged with the lamp holders bunched together, and after removal from the packaging the arms are rotated relative to the body to space the lamp holders apart.

Preferably, in the spaced apart condition the arms are locked in respective defined positions relative to the body, and conveniently the arms automatically lock in their defined positions upon rotation of the respective arms. Once locked in position, the arms cannot be readily returned to their initial configuration.

A second aspect of the present invention provides a light fitting comprising a body with a plurality of arms extending outwardly from said body for support of respective lamp holders, wherein at least some of said arms are rotatable relative to the body from first positions where the lamp holders are bunched, to second positions wherein the lamp holders are spaced apart.

The light fitting may for mounting on a ceiling, wall, or lamp stand. The fitting may include one arm which is rotationally fixed relative to the body, and may include at least two rotatable arms, and may include as many as twelve rotatable arms. The body may be enclosed in a decorative housing.

Preferably, locking means hold the rotatable arms in said second positions and each rotatable arm may be provided with a respective locking means which operates automatically on rotation of the respective arm. The locking means preferably comprises a resiliently biased catch rotationally fast with a respective arm and which is engageable in an aperture, slot, or other detent, in the base. preferably the locking means is not readily releasable. Each locking means may comprise a spring washer having a projection thereon which in use is resiliently biased towards the base to snap into a respective aperture on alignment therewith.

Alternatively, the locking means comprise a spring device having portions thereof engagable with the ends of the arms when said ends are orientated in respective prederemined positions.

Description of the Drawings

The invention will be described by way of example and with reference to the accompanying drawings in which:

Fig. 1 is an isometric view of a light fitting according to the present invention in a collapsed condition for packaging and transport,

Fig. 2 is an enlarged view of the rotation/lock means of the fitting in Fig.1,

Fig. 3 is a sectional view through a rotatable arm

and washer,

Fig. 4 is an isometric view of the light fitting of Fig.1 in a fully assembled condition,

Fig. 5 is an enlarged view of the rotation/lock means of Fig 2 in the locked position.

Fig. 6 is an isometric view of a second rotation/lock means in collapsed condition, and

Fig. 7 shows the rotation/lock means of Fig 6 in the assembled condition.

Detailed Description of the Invention

Referring to Figs. 1 to 3, there is shown a light fitting 10 comprising a body 11, three lamp holders 12-14 mounted to the body by respective arms 15-17, and optionally a decorative housing 18 enclosing the body 11. The light fitting may be a ceiling mounted unit as shown or may be of a form suitable for use with a stand, or for mounting on walls. The arms 15 -17 all have portions 15A-17A extending away from the body 11 along first axes and are shaped to any desired form, in this case being looped back on themselves to form a respective hook shape having a respective lamp holder 12-14 at their free ends. The lamp holder include standard bayonet or screw threaded electrical light bulb holders.

The body 11 is in the form of a disc, preferably a metal disc for example zinc plated mild steel, having three

equiangularly spaces holes therein to accommodate screw threaded end portions 15B-17B of the arms 15-17. The arms 15-17 are preferably formed from mild steel tube 6-8mm in diameter having a decorative coating. The arm 16 is rotationally fixed relative to the body by a nut 21 engageable with the threaded portion 16B to fixedly clamp a portion of the arm against the body.

The arms 15 and 17 are mounted for rotational movement relative to the body 11 allowing the arms to be rotated about their substantially parallel first axes. The arms 15 & 17 are clamped to the body 11 by respective nuts 20 & 22 which exert a clamping load of between 1.1 to 4.0 2N/m so that the arms are rotatable relative to the body 11 once the clamping load has been overcome.

Each threaded portion 15B and 17B has a flat 25 thereon which is engageable with a co-operating flat 26 on a respective washer 27 so that each washer 27 is rotationally fast with the respective arm. Each washer 27 has a radially outwardly extending lug 28 with an end portion 29 formed normally thereof which extends towards the body 11. The washers 27 are formed from stainless steel or spring steel so that when the washers 27 are clamped to the adjacent surface of the body by the respective nuts 20 or 22, the lugs 28 resiliently deform as is shown in Fig 2.

The body 11 also has further through holes 31 & 32

associated with the respective washers 27 and which are radially aligned with the end portions 29 thereof. The lugs 28 are engageable in the holes 31,32 when the arms 15 & 17 are rotated to circumferentially align the end portions 29 with a respective hole 31 or 32. In this condition the end portions resiliently snap into the holes as is shown in Fig. 5. The washers 27 and respective holes 31,32 form a snap lock means for locating the rotatable arms 15 & 17 in a fixed position relative to the fixed arm 16.

The washers 17, and nuts should provide for electrical earth conductivity between the arm and the base which has a resistivity of less than 0.5 ohms.

The body 11 and lock means are located within the housing 22.

The light fitting 11 is packaged for storage, transport, and/or sale in the collapsed state shown in Fig. 1 with the rotatable arms in positions so that the lamp holder 12,13 14 are bunched together. For assembly purposes, for example after sale, the rotatable arms 15 and 16 are turned to their in use positions as shown in Fig. 4 with the lamp holders 12 13 14 spaced apart. The arms are located in the correct positions by engagement of the lugs 28 on the washers 27 in their respective holes 31,32. Once the lugs 28 engage in the holes 31,32 they cannot be readily released to allow the fitting to be collapsed.

The light fitting may be modified in various ways not shown, for example the lug 28 could engage with other different forms of detent and the number of arms may be varied as is desired.

A second light fitting 100 also according to the present invention is shown in Figs. 6 and 7. The fitting is similar to that disclosed with reference to Figs 1 & 4 and the same reference numbers will be used where appropriate.

Referring to Fig. 6, the fitting 100 comprises a body 11, a fixed arm 16 and two rotatable arms 15 & 17 which are secured to the base using nuts 20-22. The rotatable arms 15 & 16 are held at the correct torque using washers, particularly spring washers 101. The base plate 11 has a central hole to accommodate an axially extending limb 102, which may for example be an upright from a stand. The limb 102 has a threaded portion 104 projects through the base 11 and which is fixed in place by a nut 103.

A locking device 105 comprising three legs 107 radiating from a central hub 106 with a hole therein, is secured to the threaded portion 104 of the limb 102 which passes through the hole. The legs 107 align radially with the arms 15-17 and each leg has a hole 108 in its outer end portion which is circumferentially aligned with the ends of the arms. The holes 108 are formed with two opposed flat sides 109 which is use co-operate with like flats on the threaded

end portions 15B,16B 17B of the arms. The flats 109 in the holes 108 are arranged to engage the flats on the arms 15-17 only when the arms are in the asssembled positions.

The locking device 105 is formed from a resilent sheet material such as stainless steel or spring steel and is assembled to the limb 104 and secured by a nut. One leg 107A engages over the fixed arm 16 and the other legs 107B and 107C are held against the threaded end of the arms in a stressed condition. When the arms are rotated to their predetermined assembled positions the arms will snap over the threaded end portions 15B and 17B as is shown in Fig 7.

Claims

1. A method of packaging, storage, and transport of a light fitting comprising a body with a plurality of arms extending outwardly from said body for support of respective lamp holders, wherein at least some of said arms are rotatable relative to the body such that the fitting is packaged with the lamp holders bunched together, and after removal from the packaging said at least some arms are rotated relative to the body to space the lamp holders apart.

2. A method as claimed in Claim 1, wherein in the spaced apart condition the arms are locked in respective defined positions relative to the body.

3. A method as claimed in Claim 2 wherein the arms automatically lock in their defined positions upon rotation of the respective arms.

4. A method as claimed in Claim 2, wherein the arms once locked in position cannot be readily collapsed to the bunched condition.

5. A light fitting comprising a body with a plurality of arms extending outwardly from said body for support of respective lamp holders, wherein at least some of said arms are rotatable relative to the body from first positions where the lamp holders are bunched, to second positions

wherein the lamp holders are spaced apart.

6. A light fitting as claimed in Claim 5 wherein locking means hold the rotatable arms in said second positions.

7. A light fitting as Claimed in Claim 6 a locking means is associated with each rotatable arm and is operated automatically on rotation of the respective arm.

8. A light fitting as claimed in Claim 7 wherein the locking means comprises a resiliently biased catch rotationally fast with a respective arm and which is engageable in an aperture in the base.

9. A light fitting as claimed in any one of claims 5 to 8, and having one arm fixed relative to the base.

10. A light fitting as claimed in any one of Claims 1 to 9 and having at least two arms which are rotatable relative to the body.

11. A light fitting as claimed in any one of Claims 1 to 10 wherein the body is located within a housing.

12. A light fitting as claimed in any one of Claims 7 to 11, wherein the locking means comprises a spring washer having a projection thereon which in use is resiliently biased towards the base to snap into a respective aperture

on alignment therewith.

13. A light fitting as claimed in any one of Claims 7 to 11 wherein the locking means comprise a spring device having portions thereof engagable with the ends of the arms when said ends are orientated in respective prederemined positions.

14. A light fitting as Claimed in Claim 13 wherein the device comrises a central hub having legs radiating therefrom, the hub being fixed relative to the body and the legs engaging the end of the arms.

15. A lamp stand including a light fitting as claimed in any one of Claims 1 to 14.

INVESTOR IN PEOPLE

Application No: GB 0200877.9 12. **Examiner:** Andrew Hughes
Claims searched: 1-15 **Date of search:** 25 April 2002

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): F4R RMG, RFP, RFT, RGG

Int Cl (Ed.7): F21S 8/04, 8/06; F21V 21/02, 21/03, 21/04, 21/14, 21/26

Other: Online: EPODOC, WPI & JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 0677546 A	(IAN HEATH LTD) particularly the abstract and figures	1-3, 5-7, 10, 11
X	WO 97/49949 A1	(FABBIAN) whole document	1-3, 5-8 10
X	WO 85/02005 A1	(VOGUE LIGHTING INC.) particularly figures 8-13	1-12
X	US 6283619 B1	(PULASKI & OTLOWSKI) particularly the abstract and figure 5	1-7, 10, 13, 14
X	US 5620248 A	(SEVACK & PALLAI) particularly lines 5-15 of column 6 and figures 10, 13, 14 & 18-20	1-10, 12
A	US 4748549 A	(SCHEER) whole document	
X	US 4726552 A	(WARSHAWSKY) figure 1	5, 10, 15
X	US 3831022 A	(PORTER & BRAY) particularly figures 2-4	1, 2, 4-6, 9, 10

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.